

BLOOD-FLUID WARMER

MANUFACTURER: ESTILL MEDICAL TECHN, INC.

Manufacturer Model# TA-200

Manufacturer's PHONE: (214) 561-6001 FAX: (214) 561-1960

Manufacturer's Website: <http://www.thermalangel.com>

Item Web Link:

<http://www.thermalangel.com>

AAC 'L' ITEM NSN 6515-01-500-3521

UAs: 268B

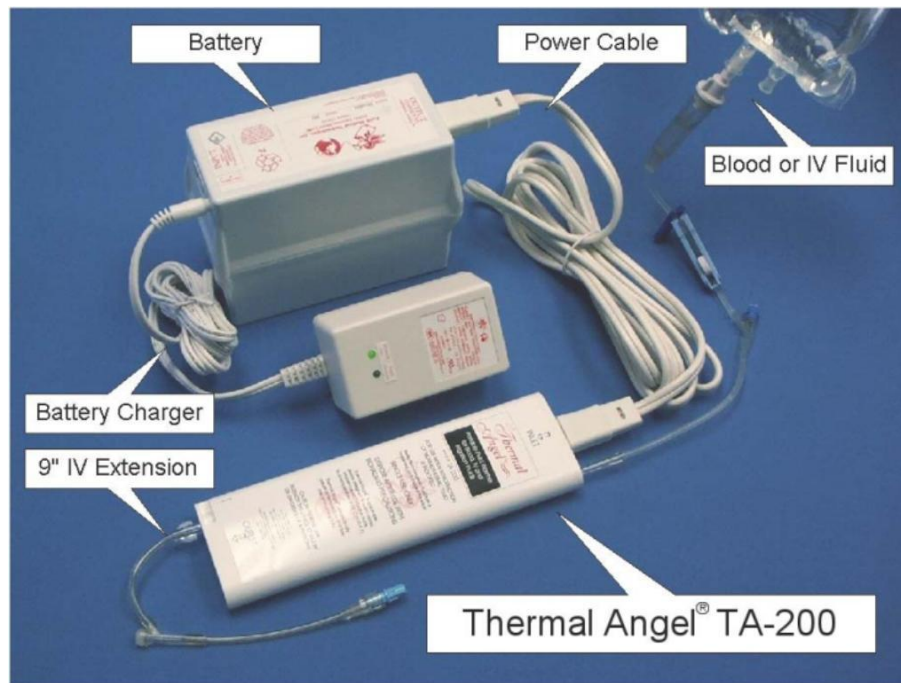
USAMMA POC: Customer Relationship Management 301-619-1288/4301 - DSN 343-1288/4301

UNIT PRICE: \$147.57

System Description: The Thermal Angel is an in-line, battery-powered, disposable, lightweight, and completely portable blood and IV fluid warming device, capable of intravenous application and irrigation warming. The Thermal Angel can be used to help prevent fluid-induced hypothermia. The Thermal Angel TA-200 will strive to achieve 38 °C (100.4 °F) ±3 °C (5.4 °F) at a flow rate of 2 to 150 mL/min given a fluid input temperature of 20 °C (68 °F) with a fully charged TA-BCE Battery.

- Features:**
- Lightweight (9 oz), in-line, portable, battery-powered blood and IV fluid warmer
 - No cartridges or cleaning
 - Quick setup within 30 seconds
 - Warms in approximately 45 seconds
 - Placed at or near the infusion site for minimal heat loss through tubing
 - Failsafe to prevent overheating
 - Ability to remain with patient from first contact through hospital stay
 - Can be used in the field, ambulances, helicopters, ER, OR, military, and other areas
 - The unit uses standard luer fittings and will accept all standard IV line sets
 - Single patient use
 - Heaters adjust automatically in response to changes in flow rate
 - Disposable

NOTE: This is just the warming unit only.



**THERMAL ANGEL
PART # TA-200
NSN 6515015003521**



**THERMAL ANGEL UNIT
PART # TA-200
NSN 6515015003521**



BATTERY CHARGER
PART # TA-CAC
NSN 6515015003022



BATTERY BAG
PART # TA-CC
NSN 6515015003045



**POWER CABLE
PART # TA-CDC
NSN 6515015003027**



A COMPATIBLE SET UP - IV BAG, PUMP, WARMER

BLOOD-FLUID WARMER
PHYSICAL & ENVIRONMENTAL SPECIFICATIONS

Item Dimensions	Height (Inches)	9
	Width (Inches)	2.8
	Length (Inches)	0.95
	Cube (Cubic Feet)	0.0139
	Weight	9.2 oz
Ship Dimensions	Height (Inches)	
	Width (Inches)	
	Length (Inches)	
	Cube (Cubic Feet)	
	Weight	
Storage Temp		32 to 104 °F
Operating Temp		
Storage Humidity		
Operating Humidity		
Amps		
Watts		
Power Requirements	10.5 VDC Min / 13.8 VDC Max	
Notes		

**BLOOD-FLUID WARMER
ACCESSORIES & CONSUMABLES - STARTUP**

NSN	Notes	Nomenclature	MFR PN Estill Medical Techn, Inc.	DIST PN	QTY	UI	Unit Price	Total Price	Shelf Life Mon.
6515015003521		Blood-Fluid Warmer	TA-200		1	EA	\$147.57	\$147.57	N/A

**BLOOD-FLUID WARMER
ADDITIONAL NOTE:**

Preliminary Evaluation of Compatibility Between Infusion Dynamics Power Infuser® and Estill Medical's Thermal Angel® Blood and IV Fluid Warmer (TA-200). Testing performed by Infusion Dynamics, Inc. -

August 9, 2002

The Power Infuser was found to be COMPATIBLE with Estill Medical's Thermal Angel provided the following configuration was used:

[IV bag] - [Power Infuser] - [Thermal Angel] - [Patient]

The Power Infuser was NOT COMPATIBLE with the Thermal Angel Warmer in this configuration:

[IV bag] - [Thermal Angel] - [Power Infuser] - [Patient]

When the Power Infuser is running at 6L/hr and is downstream of the warmer, the occlusion alarm will not activate when the patient tubing is occluded. (Operation at the 1L/hr., 2 L/hr., and 4L/hr. settings is acceptable). This occurs due to a more compliant system resulting from the elevated temperature in the fluid path.

BLOOD-FLUID WARMER

ITEM TABLES

TA-200 External Physical Specifications

SPECIFICATION	VALUE
Length	9.0 inches (22.86 cm)
Width	2.8 inches (7.11 cm)
Depth	0.95 inches (2.41 cm)
Weight	9.2 ounces (260.82 g)

TA-200 Absolute Minimum and Maximum Specifications

SPECIFICATION	MINIMUM	MAXIMUM
Output Temperature	NA	47°C (116.6°F) failsafe fuse
Input Temperature	4°C (39.2°F)	38°C (100.4°F)
Input Flow Rate	0 ml/min	200 ml/min
Input Voltage	10.5 Volts DC	13.8 Volts DC
Storage Temperature	0°C (32°F)	40°C (104°F)

TA-200 Performance Specifications

SPECIFICATION	VALUE
Output Temperature	38°C (100.4°F)
Accuracy	±3°C (5.4°F)
Input Temperature	20°C (68°F)
Input Flow Rate	2 to 150 ml/min
Input Voltage	12 Volts DC from a fully charged power source
Warm-up Time	Approximately 45 seconds

TA-200 Fluid Path Specifications

DIMENSION	VALUE
Volume	0.540 cu. in. (8.85 ml)
Material	Passivated 316L stainless steel tube
Tube Length	50.25 in. (127.5 cm)
Tube Wall Thickness	0.035 in. (.098 cm)
Tube I.D.	0.117 in. (.30 cm)

TA-200 Heater Specifications

SPECIFICATION	VALUE
Type	Electrical resistance, band heater
Material	1 oz. copper
Substrate	3 mil polyester film
Approximate Area	17 sq. in.
Nominal Power	216 watts @ 12 Volts DC

TA-200 Controller Specifications

SPECIFICATION	VALUE
Operational Voltage	5 Volts DC
Processor	8-bit microcontroller
Clock Rate	8 MHz
ADC Configuration	8-bits
Sensor	NTC Thermistor mounted in fluid stream
Control Algorithm	Closed-loop PID (Proportional Integral Differential)
Sample Rate	4.8 Ks/sec

TA-200 Quick Steps

STEP	ACTION
1	Remove the female luer cap from the inlet end of the Thermal Angel®.
2	Connect IV tubing to the female luer. Tighten until resistance is met. Do not over tighten.
3	Remove the male luer cap from the outlet end of the Thermal Angel®.
4	Connect 9 Inch IV Extension Set to the male luer. Tighten until resistance is met. Do not over tighten.
5	Connect assembled IV line to fluid source and prime the line.
6	Connect the male end of the Power Cable to the inlet end cap of the Thermal Angel®. Connect the female end of the Power Cable to the Battery.
7	The green LED on the Thermal Angel® inlet end cap should display continuous illumination without blinking.
8	Connect 9 Inch IV Extension Set to IV catheter.
9	Engage roller clamp on IV tubing to adjust flow.